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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,029	02/14/2001	Jae-Ho Moon	P56310	8245
8439	7590	04/28/2004	EXAMINER	
ROBERT E. BUSHNELL 1522 K STREET NW SUITE 300 WASHINGTON, DC 20005-1202			HUFFMAN, JULIAN D	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 04/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/782,029	MOON ET AL.	
	Examiner	Art Unit	
	Julian D. Huffman	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
 THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 19 December 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 3,6,27,36 and 37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 7 is/are allowed.
- 6) Claim(s) 3,6,27,36 and 37 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 14 February 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

DETAILED ACTION

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 3, 6, 27, 36 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato.

Sato discloses an ink jet printhead, comprising:

a substrate being a single integrated monolithic and homogenous unit of silicon (fig. 5, element 3, see section 0006 of machine translation from Japanese Patent Office), said substrate, having a rear surface, said rear surface having a channel (4a) having a predetermined depth, wherein a plurality of ink feed holes are formed on a bottom of the channel perforating said substrate;

a nozzle plate coupled to a front surface of the substrate (17), said nozzle plate being perforated by a plurality of chamber-orifice complex holes (7), wherein each chamber-orifice complex hole corresponds to at least one of said plurality of ink feed holes;

Art Unit: 2853

a plurality of heaters (5a, figs. 4 and 9) disposed on the front surface of the substrate (10), each one of said plurality of heaters being located near corresponding ones of said plurality of chamber-orifice complex holes, wherein each one of said plurality of ink feed holes is formed at a center portion of a corresponding one of said plurality of chamber-orifice complex holes (fig. 5), and each one of said plurality of heaters surrounds corresponding ones of said plurality of ink feed holes (fig. 5);

wherein each one of said plurality of heaters is of an omega shape that surrounds said corresponding feed hole (figs. 4 and 9);

wherein each chamber-orifice has a truncated conical shape (0028), wherein a lower end of said chamber orifice facing said substrate faces the corresponding ink feed hole and heater formed on the substrate and the other end having a smaller diameter faces toward an outside of said ink-jet printhead (fig. 5);

each chamber orifice hole having a cylindrical shaped portion on a portion of said chamber-orifice hole closest to a side of said nozzle plate (fig. 5, near the substrate, the hole is cylindrical) that attaches to said substrate and a conical shaped portion on a portion of said chamber-orifice hole closest to a side of said nozzle plate opposite from where said nozzle plate attaches to said front surface of said substrate (the side closest to the nozzle plate substrate has a conical shaped portion), said conical shaped portion being a section of a right circular cone with an axis perpendicular to said front surface of said substrate and perpendicular to said surfaces of said nozzle plate; and

said cylindrical shaped portion having an axis that is perpendicular to said front surface of said substrate and perpendicular to surface of said nozzle plate (fig. 5).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy et al. (U.S. 6,045,214) in view of Bassous et al.

Murthy et al. disclose an ink-jet printhead, comprising:

a substrate being a single integrated monolithic and homogenous unit (fig. 1, element 12), said substrate, having a rear surface, said rear surface having a channel (28) having a predetermined depth, wherein a plurality of ink feed holes are formed on a bottom of the channel perforating said substrate (there are a plurality of nozzle arrangements with an ink feed channel for each pair);

a nozzle plate coupled to a front surface of the substrate (10), said nozzle plate being perforated by a plurality of chamber-orifice complex holes (18), wherein each chamber-orifice complex hole corresponds to at least one of said plurality of ink feed holes; and

a plurality of heaters disposed on the front surface of the substrate (22, column 2, lines 32-36), each one of said plurality of heaters being located near corresponding ones of said plurality of chamber-orifice complex holes, said nozzle plate being a single

Art Unit: 2853

integrated monolithic and homogenous unit, each chamber-orifice hole having a cylindrical shaped portion on a portion of said chamber-orifice hole closest to a side of said nozzle plate that attaches to said substrate and a conical shaped portion on a portion of said chamber-orifice hole closest to a side of said nozzle plate opposite from where said nozzle plate attaches to said front surface of said substrate, said conical shaped portion being a section of a right circular cone with an axis perpendicular to said front surface of said substrate and perpendicular to said surfaces of said nozzle plate (fig. 1).

Murthy et al. do not expressly disclose the substrate being made of silicon.

However, Bassous et al. disclose the use of a silicon substrate (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the substrate of Murthy et al. of silicon, as taught by Bassous et al. The reason for performing the modification would have been to enable the use of fabrication technology compatible with present day integrated circuit processing procedures utilizing semiconducting silicon (column 2, lines 46-48), allowing control circuitry to be integrated on the same substrate (column 12, lines 61-65) and enabling the individual jets to be addressed separately and controlled separately (column 13, lines 10-13).

Response to Arguments

6. Applicant's argument that Sato does not disclose an omega shaped heater is not persuasive. The omega shaped heater is clearly shown in figs. 4 and 9.

Applicant's argument that Sato does not disclose a truncated conical shape is not persuasive since Sato clearly discloses the truncated conical shape in fig. 5 and describes it in section 0028 of the translation.

Applicant's argument that Murthy does not disclose a one to one correspondence between the nozzle holes and feed holes is not persuasive as this limitation is never claimed.

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian D. Huffman whose telephone number is (571)272-2147. The examiner can generally be reached Monday through Friday from 9:00 a.m. to 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier, can be reached at (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 2853

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



JH

April 6, 2004



**STEPHEN MEIER
SUPERVISORY PATENT EXAMINER**